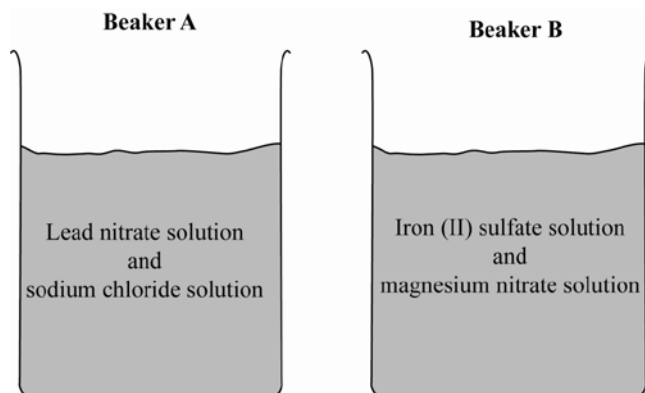


Precipitation

1) A chemical reaction occurs when a solution of calcium nitrate is added to a solution of sodium hydroxide. Analyse this reaction by:

- describing any observations that would be made
- identifying the products
- explaining what happens to EACH ion that is present in these two solutions
- writing a balanced symbol equation for this reaction. (Spectator ions may be omitted.)

2) Two solutions are mixed in one beaker and two different solutions are mixed in another beaker, as shown in the diagram below. A precipitate forms in one of the beakers.



Identify the beaker in which a precipitate would form and justify your choice. In your answer, you should:

- state which beaker the precipitate would form in
- name the ions present in that beaker before they are mixed
- name the precipitate formed (use the solubility rules in the resource booklet)
- write a balanced symbol equation for the precipitation reaction
- fully explain why no other precipitate will form in that beaker.

3) When a fresh solution of iron(II) sulfate is added to a solution of potassium carbonate, a precipitate forms.

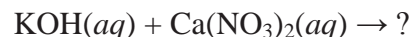


Discuss the process of this precipitation reaction. In your answer:

- State any observations you would make.
- Explain what happens to **each ion** present in the solutions used in this reaction.
- Write the name or formula of the precipitate formed.
- Write a balanced equation (spectator ions may be omitted).

Refer to the solubility rules provided in the Resource Booklet.

4) Discuss what happens when a solution of potassium hydroxide is added to a solution of calcium nitrate.



In your answer:

- describe the observations you would make
- predict the products that will form
- explain what happens to **each ion** present in the solutions used in this reaction
- write a net ionic equation for the precipitation reaction.

You may use the Solubility Rules in the Resource Booklet provided.

5) Each of the following equations shows what could happen when two solutions are mixed in a beaker.



Use the solubility rules in your Resource Booklet to identify **which reaction would form a precipitate**.

Justify your answer by:

- identifying the ions present in each solution before they are mixed
- identifying the precipitate formed when the solutions are mixed
- explaining why that precipitate forms

6) The following pairs of solutions are mixed. Use the solubility rules in your Resource Booklet to identify if a **precipitate** is formed.

(a) Write the **name of the precipitate**. If none is formed, write **no precipitate**.

	Solutions that are mixed	Name of the Precipitate, OR No Precipitate
(i)	Silver nitrate + calcium chloride	
(ii)	Potassium sulfate + iron(II) nitrate	
(iii)	Calcium nitrate + sodium sulfate	

Write a balanced equation for the formation of ONE precipitate identified in (a) above. Spectator ions may be omitted from ionic equations.

7) lead nitrate + potassium chloride --> +

8) A colourless solution of barium nitrate is added to a pale green solution of iron(II) sulfate in a beaker. A reaction occurs.

(a) Describe the observations that would be expected for this reaction.

(b) State what type of reaction is occurring.

(c) Discuss the chemistry of this reaction. Your discussion should refer to the observations you made in part (a). Include a balanced equation in your answer. Spectator ions may be omitted.

9) The following solutions are mixed in the pairs shown. Use the solubility rules in your Resource Booklet to identify the **precipitate** (if any) that is formed for each pair.

(a) Write the **name of the precipitate** or, if none is formed, write **no precipitate**.

	Solutions that are mixed	Name of precipitate, or no precipitate
(i)	Sodium chloride and copper nitrate	
(ii)	Lead nitrate and potassium chloride	
(iii)	Potassium hydroxide and magnesium sulfate	

(b) Write a balanced equation for the formation of ONE precipitate identified in Question Two (a) above. Spectator ions may be omitted from ionic equations.

10) (a) The following pairs of solutions are mixed. Use the solubility rules in your Resource Booklet to identify the **precipitate** (if any) that is formed. Write the **name of the precipitate** or, if none is formed, write **no precipitate**.

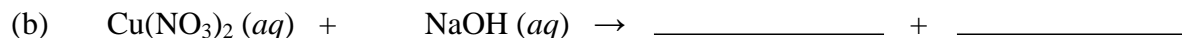
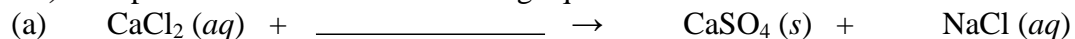
	Solutions that are mixed	Name of precipitate, or no precipitate
(i)	calcium nitrate and sodium sulfate	
(ii)	copper chloride and potassium hydroxide	
(iii)	magnesium sulfate and sodium chloride	

(b) Write a balanced equation for the formation of ONE precipitate identified in Question Two (a) above. Spectator ions may be omitted from ionic equations.

11) Complete the table below by writing the **name of the precipitate**, or **no precipitate** if one is not formed. Use the Solubility Rules in the Resource Booklet.

	Solutions that are mixed	Name of precipitate, or no precipitate
(a)	magnesium sulfate and calcium nitrate	
(b)	lead nitrate and sodium chloride	
(c)	potassium carbonate and zinc sulfate	

12) Complete and balance the following equations:



13) A solution of **sodium hydroxide** is added to a solution of **iron (III) chloride**.

- (i) Describe ONE observation that would be made:
- (ii) Write a balanced equation for this reaction: